



PHYSICS COLLOQUIUM:

AI In the Sky: The Promise and Peril for the use of Artificial Intelligence in Cosmology and Society

Date: **2/7/20**

Time: **10:30–11:50 AM**

Location: **COB2 140**

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Abstract

Artificial Intelligence (AI) refers to a set of techniques that rely primarily on the data itself for constructing highly accurate models of observed phenomena. AI has had a long history of development, and there has been a recent resurgence in its research and deployment. This is marked by extraordinary results in many contexts across society --- from the promise of self-driving vehicles and accelerated biomedical engineering to the peril of automation in the criminal justice system, retail stores, and the military. Moreover, in the last few years, AI has had substantial impacts in the physical sciences, like molecular chemistry, particle physics, and more recently, astronomy.

However, the story is far from over: these techniques face significant challenges to reach their full potential, especially in scientific contexts. During this conversation, we'll first look at modern AI techniques, like neural networks, including the major changes that enabled their rise to prominence. Then, we'll discuss how the need for significant algorithmic development for trustworthy use in both science and society. This will include examples from astronomy and cosmology, and a vision for where these efforts may take us in the future. Finally, we'll talk about the implications for AI's increasing pervasiveness in society and consider our roles as individuals in an increasingly data-driven world.

About the Speaker

Brian Nord works at the intersection of artificial intelligence (AI) and astrophysics to address critical challenges in the modeling of our cosmic phenomena. Nord also studies and implements new methods in education and public engagement in an effort to improve the richness of human connection in the context of critical thinking. His work in re-designing research spaces and communities is currently focused on the Deep Skies Lab, where the human component of research comes first. Nord is an Associate Scientist at Fermilab and a research scientist at the University of Chicago, where also co-leads the Kavli Institute's public engagement program. He is the co-founder and director of the Deep Skies Community.